

AN APPLICATION OF OSGOOD'S "SEMANTIC DIFFERENTIAL" TECHNIQUE

BY

J. A. MICHON

Psychological Laboratory, University of Utrecht, Netherlands

The "semantic differential" technique of Osgood, which has been developed independently in Europe by Hofstätter, has been (provisionally) validated for the Netherlands by Kouwer (3).

Both Osgood (5, 6) and Kouwer in his above-mentioned study, have mainly experimented with the aim of finding usable scales, i.e. scales which would give the best possible representation of the semantic factor structures, and also with the validation of these scales for various groups of subjects.

But there are more possibilities for this technique, as has been shown in the examples contained in Osgood's book. For instance, by regarding the factors found as dimensions of a semantic space, it is possible to describe the meanings of notions in terms of a space model, in which all these notions have a certain place. This can be done, if we dispose of a system of scales of contrasting pairs of notions, which gives the best possible representation of the factor structure; a system, therefore, the separate scales of which show a loading in only one single factor.

There are certain difficulties connected with the right treatment of this "model of meaning".

The present study is intended firstly to give an example of the application of Osgood's technique in the above-mentioned sense, and secondly to show some of the difficulties which may occur in doing so.

METHOD AND TECHNIQUE

Our experiment has been performed with a group of 50 subjects, selected according to the criteria which had been chosen by Kouwer for his subjects, i.e.: an equal distribution over the dichotomous dimensions Male — Female; Over 25 years — Under 25 years of age; and Students of Psychology (plus some graduates) — Not students of Psychology.

These subjects were invited to evaluate twelve indications of emotions on the eight scales proposed by Kouwer. These eight scales are representative of three factors:

I. Value Factor ¹	beautiful — ugly good — bad
II. Potency Factor	(Kouwer's Intensity-Contrast) large — small deep — superficial strong — weak
III. Dynamic Factor	(Osgood's Activity Factor) rapid — slow changing — constant active — passive

The best distribution of the weighting of all three factors is obtained by a summation of the results of the various scales.

The emotional aspects to be evaluated were presented in stimulus words of the following order: ²

- | | |
|----------------|------------------------|
| 1. Annoyance | 7. Fear |
| 2. Hatred | 8. Pity |
| 3. Resignation | 9. Anxiety |
| 4. Rage | 10. Aversion |
| 5. Admiration | 11. Resentful pleasure |
| 6. Woundedness | 12. Guilt |

The subjects evaluated these twelve emotions against each of the eight "contrast pairs", which, as usual, were placed at the extremes of seven-point scales. They were given a booklet, in which on each page one of the twelve emotions was mentioned, together with the eight contrast scales, in a random order, different for each page.³

One or two days after the subject had made his evaluation of the twelve notions according to what they meant to him or her, they were presented with a second task, namely an evaluation on the same eight scales of their

¹ In Dutch: I Waarde Factor: mooi—lelijk; goed—slecht.
II Potentie Factor: groot—klein; diep—oppervlakkig; sterk—zwak.
III Dynamiek Factor: snel—langzaam; wisselend—gelijkmatig; actief—passief.

² In Dutch: ergernis, haat, berusting, boosheid, bewondering, gekwettheid, angst, medelijden, benauwdheid, afkeer, leedvermaak, schuld.

³ This method of presentation differs from that used by Kouwer, who also mixed the notions to be evaluated in a random sequence. In our case this method has the drawback that (as we found) one is never quite certain whether a notion X to be evaluated by the subject has the same meaning if presented in the beginning or later on, in other words, whether in both cases the same notion X is evaluated.

own emotions excited by a newspaper report on a certain criminal event. In total, eight such reports have been used, so that just as many evaluations were obtained. The reports referred to the following:

- A. Ill-treatment of children. An enraged father beats his child, which dies from the consequences two days later. (Art. 300/304, 1° W. v. Sr.) ⁴
- B. Swindling. A man pretends to be canvasser for a steaming company and so manages to embezzle clothing. (Art. 326 W. v. Sr.)
- C. Ill-treatment of children. A mother maltreats her (unwanted) son, who repeatedly arrives at school covered with weals and black and blue marks. (Art. 301/304, 1° W. v. Sr.)
- D. Robbery. Men penetrate into a house, knock a woman down and steal 500 guilders. (Art. 312 W. v. Sr.)
- E. Homicide. Man shoots in a quarrel and kills the wrong person. (Art. 287 W. v. Sr.)
- F. Embezzlement of fiancée's money, all lost by speculations. (Art. 321 W. v. Sr.)
- G. Torment of animals. Man pours vinegar into the mouth of his wife's cat, as a consequence of which it has to be destroyed. (Art. 254 W. v. Sr.)
- H. Mass murder. The case Petiot, Paris physician, who killed at least 25 women. (Art. 289 W. v. Sr.)

The criteria, used for the selection of these reports, were:

- 1° Date of the case not later than 1950.
- 2° Contents described in the least possible "sensational" manner, thus mainly factual descriptions (7 from the 8 cases were taken from the *Nieuwe Rotterdamsche Courant*, a rather dignified liberal Newspaper).

The instructions, given to the subjects in both parts of the experiment, were based on a translation of the written instructions used by Osgood (6). In our experiment too, written instructions were presented to the subjects. In the second part these were supplemented by a verbal explanation, in order to make it clear to the subjects, that they should not evaluate the content of the reports themselves, but the emotions to which these gave rise. If this was omitted, the subjects generally found it almost impossible to fulfill the instructions.

⁴ The number given in parentheses indicate the articles of the Dutch penal code which are broken.

TABLE 1
Mean evaluation on the eight contrast scales for all "Emotions" and "Reports" (50 subjects)

		NEWSPAPER REPORTS							
		A	B	C	D	E	F	G	H
I + BEAUTIFUL (MOOI) GOOD (GOED) LARGE (GROOT) DEEP (DIEP) STRONG (STERK) RAPID (SNEL) CHANGING (WISSELEND) ACTIVE (ACTIEF)	1 ANNOYANCE ERGERNIS	-1.83	-2.36	+0.97	-1.56	-1.05	-1.04	-1.06	-1.06
	2 HATRED HAAT	-1.17	-2.14	+1.05	-1.04	-1.05	-1.04	-1.05	-1.05
	3 RESIGNATION BERUSTING	+0.36	+1.15	+0.66	+0.54	+1.53	+0.04	+0.96	+0.96
	4 RAGE BOOSHEID	+0.25	+2.06	+1.07	-0.45	+1.69	+0.96	+0.96	+0.96
II - UGLY (LELIJK) BAD (SLECHT) SMALL (KLEIN) SUPERFICIAL (OPPERVLAKKIG) WEAK (SWAK) LOW (LANGZAAM) CONSTANT (GEIJNDIG) PASSIVE (PASSIEF)	5 ADMIRATION BEWONDERING	-1.83	-2.36	+0.97	-1.56	-1.05	-1.04	-1.06	-1.06
	6 WOUNDEDNESS GEKWETSHEID	-1.17	-2.14	+1.05	-1.04	-1.05	-1.04	-1.05	-1.05
	7 FEAR ANGST	+0.36	+1.15	+0.66	+0.54	+1.53	+0.04	+0.96	+0.96
	8 PITY MEDELIDEN	+0.25	+2.06	+1.07	-0.45	+1.69	+0.96	+0.96	+0.96
III + BEAUTIFUL (MOOI) GOOD (GOED) LARGE (GROOT) DEEP (DIEP) STRONG (STERK) RAPID (SNEL) CHANGING (WISSELEND) ACTIVE (ACTIEF)	9 ANXIETY BENAUDHEID	-1.83	-2.36	+0.97	-1.56	-1.05	-1.04	-1.06	-1.06
	10 AVERSICN AFKEER	-1.17	-2.14	+1.05	-1.04	-1.05	-1.04	-1.05	-1.05
	11 RESENTFUL PLEASURE LEEDVERMAAK	+0.36	+1.15	+0.66	+0.54	+1.53	+0.04	+0.96	+0.96
	12 GUILT SCHULD	+0.25	+2.06	+1.07	-0.45	+1.69	+0.96	+0.96	+0.96

RESULTS

The average scores on each of the eight scales for all emotions and the emotional values of the various newspaper reports (henceforth indicated as "reports") are given in Table 1. There, the results for all 50 subjects have been taken together. Kouwer has shown for his experimental group, that this can be done. Factor-analysis has demonstrated that our group too is sufficiently homogeneous. We obtain results similar to those of Kouwer. In this case, the Simple Summation method of factor-analysis has been used, as designed by Burt.

Factor-analysis has been performed over 25 % of all values mentioned in Table 1, by taking the first and the fifth value of column 1 (annoyance), the second and sixth value of column 2 (hatred), etc. These average values were computed for each of the eight sub-groups. It appears, that all eight groups of subjects show a considerable loading (0.89—0.97) in one general factor which contributes 78 % to the total variance. The residual is almost nil and doesn't show a second factor.

The intercorrelations between the eight subgroups are all of the same order and significant below the level of 0.001 ($t > 3.87$).

<hr/>				
r				
<hr/>				
Male	-	Female	+	0.75
<25y.	-	<25y.	+	0.75
Ps	-	n.Ps	+	0.74
				$\left. \vphantom{\begin{matrix} 0.75 \\ 0.75 \\ 0.74 \end{matrix}} \right\} p < 0.001$

A particularity is the somewhat deviant result in the group of male psychologists over 25 years of age, in which some graduate psychologists were included. They are in accordance with the general semantic pattern of the other groups, but tend to more levelled results. On the scales, which run from + 3 to — 3, this group has an average "extreme" of ± 1.0 , whereas the seven other groups show an average "extreme" of ± 1.5 . Therefore the first-mentioned group can be said to tend to be more cautious in their evaluation. Where the group is small this might be merely coincidental.

All values reported in Table 1 are exact to ± 0.02 . In Table 2 the results of Table 1 have been summarized, by totaling the values on those scales which represent the same semantic dimension (cf. above, and Kouwer, 3 p. 11).

In fact, the values reported in Table 2 therefore represent the ordinates of the various notions and reports in the semantic "space" which in the present case is a three-dimensional one.

In order to see whether it is justified to use a three-dimensional model as a representation of the results, a factor-analysis (D-method, as described by Osgood (6)) has been performed on the results of Table 1.⁵ This yields four factors, the last of which has only unimportant loadings in most of the cases. The first three factors coincide with the already mentioned Value-, Potency- and Dynamic-Factors. The fourth is probably equivalent to the fourth factor found by Kouwer. In view of the slight importance of this factor it seems to be justified to neglect it in our further considerations. The three values found for each emotion and each report can thus be taken to indicate its place in this semantic space—with a dimension of value, one of potency, and one of dynamic. Now it is possible, by starting from Table 2, to obtain a three-dimensional model of the semantic space. This is presented in fig. 1.⁶ From this three-dimensional figure the mutual relationships between the respective emotions and reports can be clearly demonstrated. The (absolute) distance between two globules is a measure for the similarity in meaning-value. These may also be determined from Table 3 in which all absolute differential distances smaller than 4.00 are shown.

The most striking relationships in meaning are the following:

- a) Rage, Annoyance, and Report E.
- b) Hatred, Fear, Aversion, and Reports A, C, and H (with Guilt in addition).
- c) Woundedness and Anxiety.
- d) Resentful Pleasure and Report B.
- e) The rather strong mutual relationship between all reports.

On closer inspection of the last-mentioned aspect we find that the mutual relationship between the reports is a rather stringent and rectilinear one, which largely but not completely coincides with one of the semantic dimensions. For if we compute the spread of the meaning of all eight reports in the semantic space, we obtain the following:

⁵ In this, we have not compared the scales, as Kouwer did, but the separate emotions and reports.

⁶ This model is based on a computation of global ordinates from the results in Table 2, in which the distance from the central point of the space is $V = \sqrt{x^2 + y^2 + z^2}$, the angle with the axis X in the plane $(X, Y) = \angle \operatorname{tg} y/x$, and the angle of the line V with this plane $(X, Y) = \angle \operatorname{tg} \frac{z}{\sqrt{x^2 + y^2}}$.

FACTOR (Dimension)	Total Mean	Spread in Dimension (SD)
I	— 4.09	0.66
II	+ 1.69	2.26
III	+ 1.66	1.20

This implies that the spread of the reports is essentially a matter of spread in the Potency-Factor. A ranking of the reports according to increasing Potency-value yields the following series:

B F D G A E C H

Here the rank order of the reports appears to be largely in conformity with the degree of seriousness of the offences, as determined in legislation.

There is one exception: Cruelty to animals (G) is regarded as a less serious offence in law than in this rank order. But it is well-known that generally the cruelty to animals is "heavily loaded" with emotional factors, hence a reaction with a fairly high "potency" can be expected.⁷

The very slight spread in factor I indicates, that all reports are experienced as rather negative in the value-factor.

The spread in the Dynamic-factor is somewhat larger but less than half that in factor II. The rank order of the reports in this series does not represent any aspect of importance:

F H G A B C D E

Starting from the rank order of the reports in the Potency Factor Table 4 shows which emotions can be attributed to the "meaning-area" of the various reports (all values over 3.00 have been omitted).

TABLE 4

	B	F	D	G	A	E	C	H
9 Anxiety	2.88	2.48						
11 Resentful pleasure	0.92	2.29	2.76	2.89				
6 Woundedness			2.51	2.56	2.08			
1 Annoyance.			2.07		2.61	1.77	3.00	
4 Rage						2.88		
10 Aversion.					1.52		2.91	2.74
7 Fear					2.29			2.38
2 Hatred							2.25	0.96

⁷ Recently (4th of October 1959) the World Society for Prevention of Cruelty to Animals made a proposal to aggravate the penalty upon this offence to a maximum of two years! (actually the maximum is 6 weeks in the Netherlands.)

As is to be expected, we find here an increase in "potency" of the emotions with that of the reports. Although all reports show a certain similarity in emotional atmosphere, the degree of general emotional "intensity" (the degree, in which the emotion takes possession of the subject) increases. This relationship is roughly rectilinear, as can be seen from fig. 1.

Summarizing the results, we come to the following conclusions:

- 1) No differences of any importance have been found between the various sections of the experimental group. Both "emotions" and "reports" are given meanings which do not differ significantly between male and female subjects, psychology students and non-psychology students, subjects under 25 and over 25 years of age (Mean $r = 0.75$; $p < 0.001$). This is in conformity with other similar experiments (Osgood, Kouwer, and Block (1)).
- 2) The results of a factor-analysis according to the D-method yield four factors, which is in accordance with the results of Kouwer. The fourth factor shows only insignificant loadings and can therefore be neglected.
- 3) The results of the total experimental group can be summarized in a three-dimensional model, in which the absolute distances are a measure for the semantic conformity between the emotions evaluated and the notions. There appear to be striking similarities between the various emotions and notions.
- 4) The reactions on the reports are predominantly determined by the "Potency"-factor. The potency of the evoked reaction is roughly directly proportional to the seriousness of the criminal act concerned in terms of legislation. Only cruelty to animals evokes a relatively much "stronger" reaction.
- 5) There exists a relationship between a number of emotions and the reports, which suggests the manner in which the reader is emotionally "affected". With increasing seriousness of the offence, the reactions become more "loaded" with emotion.

DISCUSSION

In relation to the first point of the conclusions formulated above, it seems justified to cite the—cautious—statement by Block: "... it doesn't seem an unlikely hypothesis that the universal experiences of man generate a common phenomenological background" (1, p. 362).

This conclusion presents itself, while it appears that expected differences in emotional meaning-value, for instance between men and women, do not exist (see page 381). This is in open contradiction, for instance, to the opinion

of Buytendijk, who says: "A finer differentiation of emotional life leads to the discovery of a richer multiplicity of qualities in the world, in which more frequently a situation may yield a motive for the intentional act of "feeling". If we suppose that female emotionality exists in a much finer differentiated participation in the qualities of things, human beings and situations, then a more pronounced sensitivity may yield a knowledge, which remains hidden in the rational and matter-of-fact existence of the male" (2, p. 127). In contradiction to this we may cite the opinion of Osgood (and Block), who states that the results "suggest that to the extent the description of emotions is a measure of the quality of affective experience the differences in the expressed emotionality between men and women are not due to differences at the level of experience" (6, p. 360).

For the differences in expressed emotionality between men and women various explanations have been suggested (Terman and Miles (cit. by Buytendijk (2)), Buytendijk o.c., Block o.c.).

But the important question which must be raised here, is: How finely differentiated is the apparatus which is used in the various experiments? On the one hand it could be that the "semantic differential" is still too coarse an instrument for a clear differentiation of even relatively clear semantic discriminations. This is unlikely, in view of the striking results obtained by Osgood a.o. On the other hand it is possible that Buytendijk's phenomenological approach gives special attention to differences in male and female experience which might be qualified as differences of shade, viewed, as it were, through a magnifying glass.

If these differences were as deep as Buytendijk suggests, we might well wonder that men still speak the same language as women. For language is a very important index of inner differentiation and richness of experience. Such differences, however, do not exist; instead we find a difference in shade which may in part be determined by social structure, and which, moreover, tends to disappear with the emancipation of woman. From different modes of existence uniform semantic structures may be obtained, and human pliancy in reaching one uniform experiential structure from radically different attitudes should not be underestimated. In direct relation to the above, a further question occurs. The distinction between men and women as well as between persons over and under 25 years is essentially made beforehand, to biological, social, chronological or other criteria, and if a comparison of the results of the various subgroups does not show any significant differences in semantic pattern, this does not mean that such differences could not be brought to light by other divisions of the group of subjects than those actually made. If there are differences in semantic

structure between two or more groups of subjects, it should be attempted to make this differentiation *from the results themselves*, rather than beforehand. In doing so, there might be brought to light differences depending on some "natural" (e.g. biological) criterion, or rather *less* lucid differences which might lead to a new working hypothesis. This problem is closely related to the meaning given to the space-model.

The ordinates of the various emotions and reports, as well as the globules of the model, indicate an average value for the semantic evaluations of the total of all subjects. In this, the spread of the results around this average value has not been accounted for. In our case this has been of less importance, because we were only concerned with *general* semantic differentials. If the distributions for the various ordinates should be accounted for in the model, it would be better not to speak of meaning-points, but of meaning-*clusters*: each mean value is situated, as it were, in the centre of a meaning-area, in which all shades of meaning have their place, and where the mean value itself is no more than a resultant, comparable to a "point of highest probability". The value of this average, this global meaning, is that it lies at the basis of mutual social comprehension between human beings. The various individual semantic valuations overlap in this point.

We may now ask whether it would be possible to give a further analysis of the meaning-clusters in order to come to a further differentiation in the meaning of a notion. This question is of great importance, because practically no single notion is purely unequivocal, so that often the meaning of a notion shows a certain ambivalence. Starting from this point, it might also become possible to bring a differentiation in the experimental group, for instance according to the prevalence of one or more of the different meanings which are all aspects of the general meaning but which as such do not manifest themselves separately.

Indeed a further differentiation in the semantic structures may be made by way of factor-analysis, by correlating and subsequently factor-analyzing the results of all subjects in a non-selected group with respect to one single notion. The factors which are thus obtained, represent the separate "composing" meanings. By a comparison of the loadings in the different factors of the subjects, it may be possible to find a dichotomous or polytomous distribution or a continuous series in the semantic structure for the experimental group.

This procedure has not been followed here, because it requires a considerable amount of computation. Preferably, the number of scales should be larger, whereas the experimental group too should not be too small in size.

It might be worth while to perform an accurate analysis of the composite meaning of a number of notions, according to the method mentioned above, for psycho-diagnostic purposes. By standardization it would be possible to determine easily the position within the semantic structure of a number of notions (such as f.i. "self", "father", "marriage", "job") by way of a direct comparison with standard groups.⁸

It is unnecessary to say much more about the mutual agreement between various emotions. This shows a confirmation of a number of very well-known relationships, especially that between Hatred, Fear and Aversion, with Guilt as a side-line which essentially corroborates the viewpoints which since Freud have been of central importance.

It is noteworthy that the difference between Hatred and both other emotions, lies in the general emotional intensity or "meaningfulness" which can be determined from the distance of the ordinates from the zero-point of the semantic space. Hatred is experienced as a "fuller" and more comprehensive emotion than the other two.

Rage and Annoyance appear to be closely related. From Table 2 it can be concluded that the difference is mainly one in the dimension of dynamics. Annoyance is experienced as somewhat less dynamic than Rage.

The close relationship between Anxiety and Woundedness is less evident, although there may be some connection with the fact that both notions stem from the physical area. In both cases a feeling of physical affliction seems to be an important aspect of the experience. But this is of course no exhaustive explanation.

A mutual comparison of the eight reports shows that differences in emotional value are to an important degree a consequence of differences in one semantic dimension: the "Potency"-dimension. The spread in the other dimensions is of less importance: all offences have a very negative ordinate in the value-dimension. A comparison of the rank order of the reports with increasing meaning-potency, resp. increasing negative value, shows a global similarity of both rankings $\rightarrow (r = 0.84)$:

Potency-dimension: B F D G A E C H

Value-dimension: F B A D E G C H

This indicates a general conformity between both dimensions, as far as the experience-value of criminal reports is concerned, although offences which are experienced as very bad (cruelty to animals) not necessarily

⁸ As has been done by Osgood, for instance in the case of "Eve White" and "Eve Black" (4, 6).

evoke as potent reactions as other highly disproved actions (Reports C and H).

If we also take the third dimension into account (see fig. 1), it may be seen that the semantic relationship between the eight reports is approximately rectilinear. This linear relationship can roughly be expressed by the following (empirical) formula's (calculated in terms of the Potency-factor).

$$\begin{array}{lll} \text{II} = - 3.0 & \text{I} = 11.5 & \text{in which } \text{I} = \text{Value-dimension} \\ & & \text{II} = \text{Potency-dimension} \\ \text{II} = + 2.5 & \text{III} = - 2.7 & \text{III} = \text{Dynamic-dimension} \end{array}$$

It can thus be concluded that public emotion on offences, as these are reported in the Newspapers, does not vary principally with the nature of the offence, but that difference are only *gradual* ones, in which the negative evaluation, the potency, and the general intensity of the emotions evoked increase (see Table 4). Via Anxiety, Woundedness and Resentful Pleasure, an emotion which appears to occur in all four minor offences, experience develops into Rage and Annoyance, whereas in the case of more serious offences Disgust, Fear and finally Hatred enter the picture.

An implication of the fact that no significant differences between the semantic differentials of males with respect to females etc. could be found, is, that an offence, as it reaches the public by way of press reports, has phenomenally the same meaning for all of these groups, and that in other words, here too the experience is a common one to all. Of course this does not mean that the final behavior patterns in reaction to these reports could not vary considerably, as in fact they will be found to do. But the conformity of their fundamental emotion meaning remains (7).

It is highly probable that it would also be possible to make a further analysis of the semantic structure of these reports by applying the method proposed above, because especially the relation to offence and offender is usually a most ambivalent one. Perhaps this would, for instance, lead to a deeper insight in the motivation of people who are involved in probation and welfare work with criminals. On the other hand, it is not unlikely that a special semantic structure in jurists will be found.

SUMMARY

This study gives an application of the technique of the "semantic differential" by Ch. E. Osgood, in the Dutch validation by Kouwer.

Twelve "emotions" and the emotional value of eight newspaper reports on different crimes are evaluated on eight contrast-scales by a sample of 50 subjects.

The results are in agreement with the findings of other investigators (e.g. Osgood, Block, Kouwer):

1. A factorial (dimensional) structure is found, mainly consisting of three independent factors: value, potency and dynamic (activity).
2. The semantic meaning does not differ significantly between men and women, between people over and under 25 years of age, nor between people of different social occupations. Factor-analysis showed only *one* high-loaded factor, contributing 78% to the total variance, and correlations between the various sub-groups were *all* significant *below* the 0,1% level.

The results are presented in a three-dimensional model, which has been appended as a stereoscopic picture.

Discussed is the contradiction between the finding *sub 2* and the standpoint of e.g. Buytendijk. It is supposed that the phenomenological viewpoint takes the risk of magnifying its findings beyond their factual importance.

A second point discussed are the representations of the meanings in semantic space. These are essentially meaning-clusters around central "points" which represent a "global" meaning. Included in these are the differences in semantic meaning between all sorts of dichotomies (polytomies) of the sample. We didn't find however significant differences between the three dichotomies *sub 2*. Therefore another way of testing the sample to bring out potential differences in meaning, is proposed.

With regard to the emotional meaning of the newspaper reports on crimes, the finding suggest that this meaning does not in the first place differ structurally in accordance to the character of the crime, but rather differs gradually with its seriousness. (This problem has been elaborated theoretically in a study in: Ned. Tijdschr. v. Criminologie (7)).

LITERATURE

1. L. Block, Studies in the Phenomenology of Emotions. *J. abnorm. soc. Psychol.* 1954, 48, 1.
2. F. J. J. Buytendijk, *De Vrouw, haar natuur, verschijning en bestaan*. Utrecht, 1956.
3. B. J. Kouwer, Een bewerking van de polariteitsprofielenmethode van Osgood. *Nederl. Tijdschr. Psychol.* 1958, 13, 1.
4. Ch. E. Osgood and Z. Luria, A blind analysis of a case of multiple personality using the semantic differential. *J. abnorm. soc. Psychol.* 1954, 49, 579.
5. ———, The Nature and Measurement of Meaning. *Psychol. Bull.* 1952, 49, 197.
6. ———, G. J. Suci and P. H. Tannenbaum, *The Measurement of Meaning*. Urbana, 1957.
7. J. A. Michon, De Misdaad in de Beleving van de Niet-misdadige Mens. *Nederl. Tijdschr. Criminol.* 1959, 1, 177.